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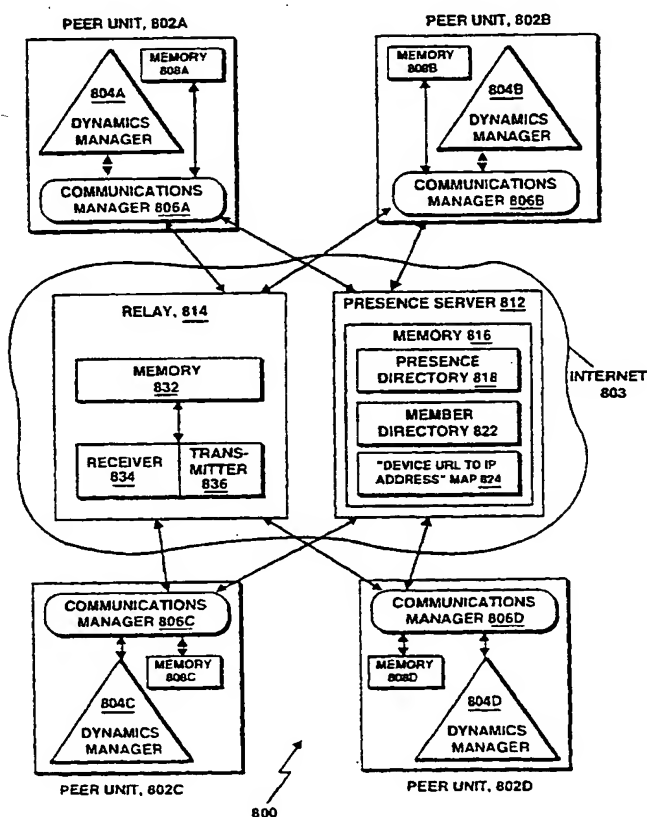
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09/357.007 **19 July 1999 (19.07.1999)** **US**
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- (72) Inventors: **OZZIE, Raymond, E.:** 50 Harbor Street, Manchester, MA 01944 (US). **MOORE, Kenneth, G.:** 7 Jack Rabbit Lane, Westford, MA 01886 (US). **MYHILL, Robert, H.:** 41 Murray Road, Newton, MA 02465 (US). **LAMBERT, Brian, M.:** 91 Chadwick Street, North Andover, MA 01845 (US).
- (74) Agent: **KUDIRKA, Paul, E.:** Kudirka & Jobse, LLP, Two Center Plaza, Boston, MA 02108 (US).
- (81) Designated States (*national*): **AU, CA, CN, IL, IN, JP, KR, SG.**
- (84) Designated States (*regional*): **European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).**

[Continued on next page]

(54) Title: **METHOD AND APPARATUS FOR ACTIVITY-BASED COLLABORATION BY A COMPUTER SYSTEM EQUIPPED WITH A COMMUNICATIONS MANAGER**

(57) Abstract: A communications manager provides communication services for an activity-based collaboration system, in which data change requests comprising deltas are communicated over a network between network-capable devices. The communications manager is operable on a local network capable device for sending locally-generated deltas over the network to at least one remote network-capable device and for receiving remotely-generated deltas over the network from the at least one remote network-capable device. The communications manager can send the deltas via unicasting, multicasting, or broadcasting techniques. The communications manager is responsive to network connection status information indicating that the remote network-capable device is connected to the network for sending the local deltas directly to an address for the remote network-capable device. A presence mechanism maintains and distributes, on request, the network connection status information, which it acquires from each of the network-capable devices. The communications manager is also responsive to the network connection status information indicating that the remote network-capable device is disconnected from the network for sending the local deltas to an address of a relay. The relay stores deltas until the relay is notified that the remote network-capable device has reconnected to the network, and then the relay sends the deltas to the reconnected remote network-capable device.

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

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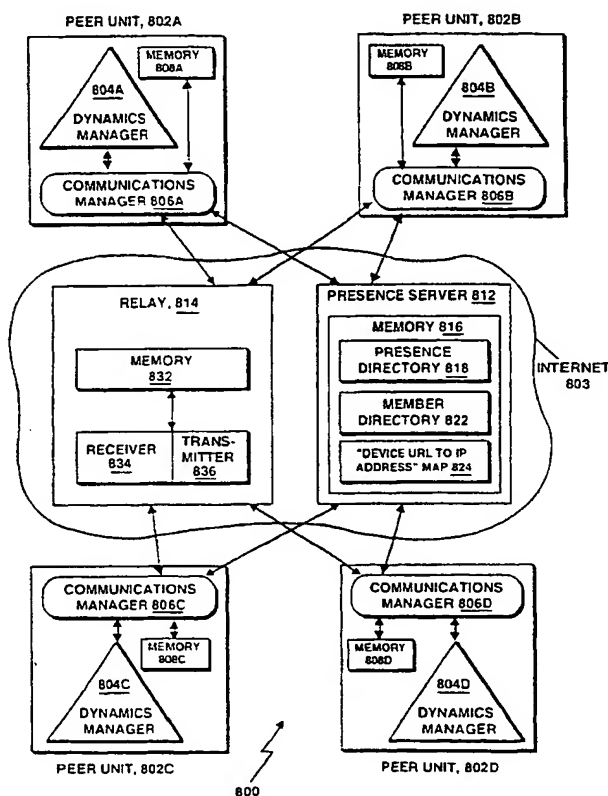
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NL, PT, SE).

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(54) Title: METHOD AND APPARATUS FOR ACTIVITY-BASED COLLABORATION BY A COMPUTER SYSTEM
EQUIPPED WITH A COMMUNICATIONS MANAGER



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Previous Correction:

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INTERNATIONAL SEARCH REPORT

Int'l Application No
PCT/US 00/17785

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G06F17/60 G06F17/30

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data, INSPEC, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	BROLL W: "Distributed virtual reality for everyone-a framework for networked VR on the Internet" VIRTUAL REALITY ANNUAL INTERNATIONAL SYMPOSIUM, 1997., IEEE 1997 ALBUQUERQUE, NM, USA 1-5 MARCH 1997, LOS ALAMITOS, CA, USA, IEEE COMPUT. SOC, US, 1 March 1997 (1997-03-01), pages 121-128, 217, XP010219610 ISBN: 0-8186-7843-7 page 121 -page 125 ---	13
A		19, 23
X	JP 10 240651 A (HITACHI LTD) 11 September 1998 (1998-09-11) abstract ---	13
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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
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Date of the actual completion of the international search

16 January 2003

Date of mailing of the international search report

05. 02. 2003

Name and mailing address of the ISA

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DE CASTRO PALOM., L

INTERNATIONAL SEARCH REPORT

International Application No

PCI/US 00/17785

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>PALFREYMAN K ET AL: "A PROTOCOL FOR USER AWARENESS ON THE WORLD WIDE WEB" CSCW '96. PROCEEDINGS OF THE ACM 1996 CONFERENCE ON COMPUTER SUPPORTED COOPERATIVE WORK. BOSTON, NOV. 16 - 20, 1996, ACM CONFERENCE ON COMPUTER SUPPORTED COOPERATIVE WORK, NEW YORK, NY: ACM, US, 16 November 1996 (1996-11-16), pages 130-139, XP000724418 ISBN: 0-89791-765-0 the whole document</p>	1,13,14, 19,20, 26-28
A	<p>MANSFIELD T., KAPLAN S., FITZPATRICK G., PHELPS T., FITZPATRICK M., TAYLOR R.: "Evolving Orbit: a progress report on building locales" PROCEEDINGS OF INTERNATIONAL ACM SIGGROUP, 'Online! 1997, pages 241-250, XP002227465 ISBN: 0-89791-897-5 Retrieved from the Internet: <URL:http://delivery.acm.org/10.1145/270000/0/266919/p241-mansfield.pdf?key1=266919&key2=2390172401&coll=portal&d1=ACM&CFID=6895445&CFTOKEN=16499429> 'retrieved on 2003-01-16! page 241 -page 244</p>	1,13,14, 19,20, 26-28
A	<p>GB 2 303 946 A (IBM) 5 March 1997 (1997-03-05) page 4, line 34 -page 5, line 9 page 5, line 40 -page 6, line 27 page 7, line 22 -page 8, line 2 page 14, line 1 - line 39</p>	1,13,19, 26
A	<p>WO 94 19751 A (TALIGENT INC) 1 September 1994 (1994-09-01) page 8, line 15 - line 35 page 14, line 14 -page 15, line 27 page 20, line 30 - line 36 claims 1-3</p>	1,13,19, 26
A	<p>WO 98 38594 A (BRINEGAR DAVID ;HINGSTON DAVID (US)) 3 September 1998 (1998-09-03) page 1, line 22 -page 3, line 1 abstract; figures 1,2</p>	1,13,19, 26
A	<p>WO 99 06925 A (DATA NET CORP) 11 February 1999 (1999-02-11) page 4, line 2 -page 5, line 16</p>	1,13,19, 26

INTERNATIONAL SEARCH REPORT

national application No.
PCT/US 00/17785

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-12

collaborative network with enhanced modularity

2. Claims: 13-37

network distributed system for coordinating and maintaining a distributed data model

INTERNATIONAL SEARCH REPORT

In International Application No
PCT/US 00/17785

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
JP 10240651	A	11-09-1998	NONE	
GB 2303946	A	05-03-1997	WO 9705554 A1	13-02-1997
WO 9419751	A	01-09-1994	AU 6161594 A	14-09-1994
			CA 2145675 A1	01-09-1994
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			WO 9906925 A1	11-02-1999

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